

## REMARKS

Claims 108, 110-114 and 116-119 are currently pending in the application. Claims 112 and 113, which were allowed per Paper No.: 9 (Office Action issued January 15, 2003), are withdrawn from consideration. It is Applicant's understanding that claims 112 and 113 will be reinstated upon allowance of the claims currently under consideration.

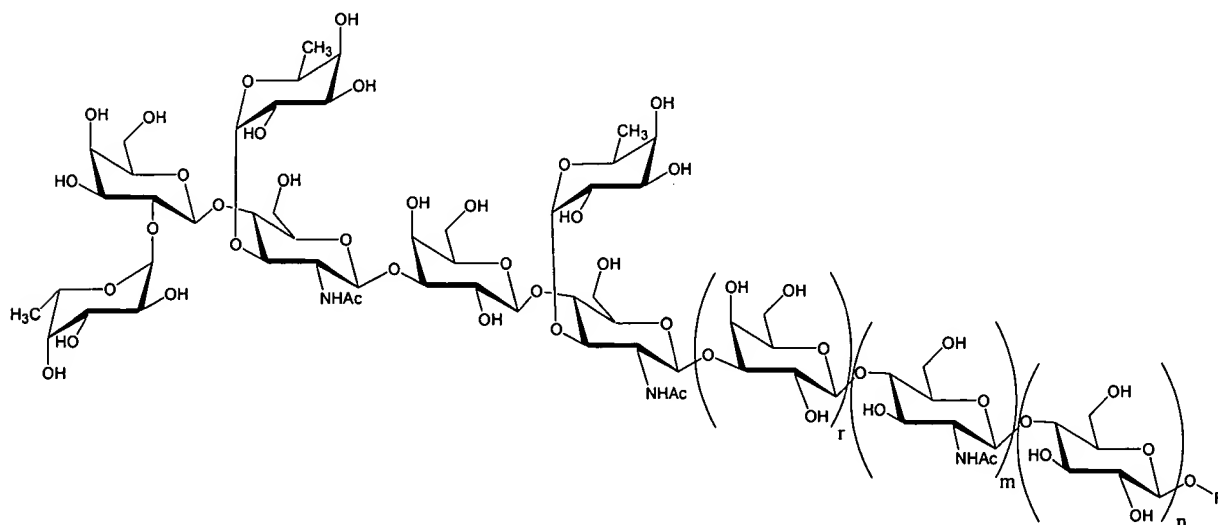
Claims 108, 110, 111, 114 and 116-119 are under consideration and stand rejected under 35 U.S.C. § 103(a) based on a number of positions laid out in detail in the 04/20/04 Office Action. Claims 110 and 116 are rejected under 35 U.S.C. § 102(b) over the Nudelman and Windmuller references cited in a previous office action. Applicant respectfully disagrees with the conclusions set forth in that office action.

### 1. Rejections under 35 U.S.C. § 102(b)

A. 35 U.S.C. § 102(b) rejection over Windmüller *et al.* (Tetrahedron Letters, 1994, Vol. 35, pp. 7927-7930).

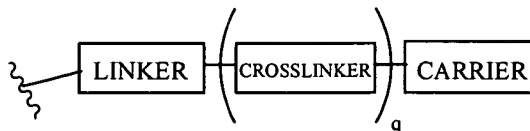
The Examiner stated that Windmüller *et al.* disclose the chemical structure of claims 10 and 116 where R is ceramide or an Sp linking group  $-(CH_2)_8CO_2Me$  (citing structure 2c on page 7929).

Claim 110 is directed to a compound having the structure:



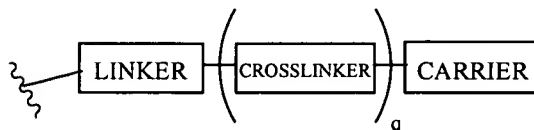
wherein r, m, and n are independently 0, 1, 2 or 3;

R is H, substituted or unsubstituted allyl, an amino acyl moiety, or a moiety having the structure:



wherein q, the linker, crosslinker and carrier are as defined in claim 110.

Applicant notes that Ceramide does not fall within the scope of the definition of variable R. Specifically, Ceramide is not H, substituted or unsubstituted allyl or an amino acyl moiety, and does not fall within the scope of the recited structure:



Applicant submits that, even if the “carrier” in the claimed constructs could be Ceramide (which it cannot, since Ceramide is neither a protein or a peptide), the compounds disclosed in Windmuller *et al.* would still not read on claim 110 because, at a minimum, the “carrier”, in the claimed constructs, is attached to the carbohydrate moiety via a CH<sub>2</sub> or CH= linker (*i.e.*, q and s were each 0). In Windmuller’s compounds, the Ceramide moiety is *directly* attached to the carbohydrate moiety. Therefore, the Windmuller *et al.* reference does not anticipate claim 110.

To provide a clear record, contrary to what the Examiner stated, Applicant did not cancel the specific embodiment “when R is a ceramide moiety, the set of indices (r, m, n) is not (1, 0, 1)” in response to the new matter rejections levied in the previous office action. Rather, that embodiment was canceled because Applicant realized that the embodiment was unnecessary since variable “R”, as recited in the claims, did not encompass Ceramide.

Claim 116 is directed to compositions comprising an inventive compound *and an immunological adjuvant and/or a pharmaceutically acceptable carrier*. The Windmüller

reference does not teach compositions comprising an immunological adjuvant and/or a pharmaceutically acceptable carrier. Therefore, the Windmüller reference cannot anticipate claim 116.

**B.** 35 U.S.C. § 102(b) rejection over Nudelman *et al.* (The Journal of Biological Chemistry, 1986, Vol. 261, pp. 11247-11253).

The Examiner stated that Nudelman *et al.* disclose the chemical structure of claims 10 and 116 where R is ceramide and the set of indices (r, m, n) is (1, 0, 1) (citing structure 2 of the abstract).

Applicant respectfully submits that Nudelman cannot anticipate claim 110 for reasons discussed in section A above (*i.e.*, R, as recited in instant claim 110, does not encompass a Ceramide moiety directly attached to the carbohydrate construct). Structure 2 in Nudelman's abstract having a Ceramide directly attached to the carbohydrate unit, it does not fall within the scope of claim 110.

Likewise, the Nudelman reference cannot anticipate claim 116 because Nudelman does not teach compositions comprising an immunological adjuvant and/or a pharmaceutically acceptable carrier.

In view of the remarks above, Applicant respectfully requests that the 102(b) rejections of record be withdrawn.

**2. Rejection under 35 U.S.C. § 103(a)**

On page 2, second to last paragraph, of the Office Action, the Examiner states that claims 108, 110, 111, 114 and 116-119 are rejected under 35 U.S.C. § 103(a) over Etlinger (EP 429816), in view of Sytokowski (WO 95/25746), in further view of Nudelman *et al.* (The Journal of Biological Chemistry, 1986, Vol. 261, pp. 11247-11253) and in further view of Kaizu *et al.* (The Journal of Biological Chemistry, 1986, Vol. 261, pp. 11254-11258). The Examiner also

discusses the Windmuller reference (page 4 third paragraph) and concludes with a *prima facie* obviousness rejection based on the Etlinger, Sytokowski, Nudelman, Kaizu and Windmuller references. Therefore, Applicant infers that the Examiner meant to include the Windmuller reference in the combination of cited reference to support her 103(a) rejection. Applicant will address the rejection accordingly.

Applicant respectfully disagrees with the conclusions of the Examiner. Specifically, the legal standard for establishing a *prima facie* case of obviousness requires that three basic criteria be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one skilled in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success in the modification or in the combination; and (3) the prior art reference must teach all the claim limitations. All three requirements must be met to establish a *prima facie* case of obviousness. In addition, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure (MPEP 706.02(j)).

Applicant maintains that the Examiner has failed to establish a *prima facie* case of obviousness because at least one the above requirements is not met.

### ***Motivation to combine***

The Examiner concedes that Etlinger does not teach B-cell epitopes having the claimed carbohydrate epitope. In fact, nowhere in the Etlinger reference is there any suggestion, much less teaching, of tumor-associated carbohydrate epitopes such as those claimed by Applicant. Therefore, one of ordinary skill in the art would not have been motivated to modify the teachings of Etlinger to arrive at Applicant's claimed invention.

Likewise, there is no teaching or suggestion in Sytokowski of carbohydrate constructs useful for the treatment of cancer, or for eliciting antibodies that bind to tumor cells, such as those claimed by Applicant. Therefore, one of ordinary skill in the art would not have been motivated to derive the claimed carbohydrate constructs from the teachings of Sytokowski, in combination with any one or more of the Etlinger, Nudelman, Kaizu and Windmuller

references.

Applicant submits that Nudelman only teaches glycolipid species (*e.g.*, triflucononasylyceramide 2), but does not provide any teaching or suggestion of carbohydrate constructs such as those claimed by Applicant, much less synthetic methods for arriving at such constructs.

Likewise, Kaizu may teach administration of a trifucosylonaosylceramide in mice with *Salmonella* Minnesota, but it provides no teaching or suggestion of carbohydrate constructs such as those claimed by Applicant, much less synthetic methods for arriving at such constructs.

The Examiner states that the Windmuller reference discloses a synthesis of building block 5 containing a  $-(CH_2)_8CO_2Me$  spacer and that the spacer would allow for the attachment of a carrier protein linked by the 4-(N-maleimidomethyl)-cyclohexane-1-carboxyl-hydrazide crosslinker taught by Sytokowsky. Applicant offers the following remarks: (i) there is no teaching or suggestion in any of the cited references of attaching Windmuller's  $-(CH_2)_8CO_2Me$  spacer to a carrier protein via a 4-(N-maleimidomethyl)-cyclohexane-1-carboxyl-hydrazide crosslinker, (ii) much less teaching of how this might be accomplished.

In summary, none of the Etlinger, Sytokowski, Nudelman, Windmuller and Kaizu references provide any teaching or suggestion to modify any of the cited references to achieve the claimed invention, much less teaching or suggestion as to how this might be accomplished.

The mere fact that references can be combined or modified does not render the resultant combination obvious, unless the prior art also teaches the desirability of the combination. As stated above, *none* of the cited references teach or suggest the modification or combination of the teachings of Etlinger, Sytokowski, Nudelman, Windmuller and Kaizu to arrive at Applicant's invention, much less the desirability of such combination. Absent any such teaching or suggestion in any of the cited references, the stated combination of references cannot be held to render obvious the claimed invention (MPEP 2143.01). Applicant respectfully submits that the Examiner has impermissibly applied "hindsight" by using Applicant's teaching as a blueprint to hunt through the prior art for the claimed elements.

In view of the remarks above, Applicant maintains that the Examiner has failed to


establish a *Prima Facie* case of obviousness, because there is no teaching or suggestion in any of the cited references to modify or combine the teachings of any one or more of the Etlinger, Sytokowski, Nuldelman and Kaizu to achieve the claimed invention. Therefore, claims 108, 110, 111, 114 and 116-119 cannot be held obvious over any one or more of Etlinger, Sytokowski, Nuldelman, Windmuller and Kaizu references. Applicant respectfully requests that the stated rejection be withdrawn.

### CONCLUSION

Applicant thanks the Examiner for his/her time and consideration. If a telephone conversation would help clarify any issues, or help expedite prosecution of this case, Applicant invites the Examiner to contact the undersigned at (617) 248-5150.

It is not believed that fees for net addition of claims are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that any additional fees required for consideration of this paper (including fees for net addition of claims) are authorized to be charged to our Deposit Account No. 03-1721.

Respectfully submitted,



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